THE JOURNAL OF SCHOOL HEALTH

Vol. XXX No. 1

JANUARY
1960

PUBLISHED BY
THE AMERICAN SCHOOL HEALTH ASSOCIATION

AMERICAN SCHOOL HEALTH ASSOCIATION

Organized 1927

Devoted to the interests and advancement of those engaged in school health activities and the service rendered by them

Officers of the American School Health Association
October, 1959 to October, 1960

President:
Lyda Smiley, R.N., M.A., LaMesa-Spring Valley School District
LaMesa, California

President-Elect:
Leland M. Corliss, M.D., Board of Education, Denver 2, Colorado

Vice President in Charge of Program:
J. Keogh Rash, H.S.D., University of Indiana, Bloomington, Indiana

Vice President in Charge of Membership:
Donald J. Ludwig, H.S.D., University of Indiana, Bloomington, Indiana

Executive Secretary:
A. O. DeWeese, M.D., 515 E. Main St., Kent, Ohio

Treasurer:
Warren Southworth, Dr. P.H., University of Wisconsin, Madison 6, Wisconsin

Editor:
Delbert Oberteuffer, Ph.D., Ohio State University, Columbus 10, Ohio

GOVERNING COUNCIL

Term Expiring 1960

Florine Thomasón, R.N.,
Richmond, Virginia

Edward B. Johns, Ed.D.,
Los Angeles, Calif.

Abram Cohen, D.D.S.,
Philadelphia, Penna.

Austin F. Hill, M.D.,
Houston, Texas

G. Robert Koopman, A.M.,
Lansing, Michigan

Term Expiring 1961

Leo Feichtner, M.D.,
Albany, New York

Elsa Schneider, M.A.,
Washington, D.C.

Ross Gutman, D.D.S.,
Albany, New York

W. K. Streit, M.A.,
Cincinnati, Ohio

Dorothy Tipple, S.N.T.,
Albany, New York

Term Expiring 1962

Mildred Doster, M.D.
Denver, Colorado

Perry Sandell, M.Ed.,
Chicago 11, Illinois

H. S. Hoyman, Ed.D.,
Urbana, Illinois

Helen Watson, R.N.,
Hartford, Connecticut

Mae Hare, P.H.N.,
Topeka, Kansas

By Special Vote of Governing Council

J. A. Myers, M.D.
Minneapolis, Minnesota

Past Presidents, Ex-Officio

All active past presidents are voting members.

Affiliated Associations

American Association for Health, Physical Education and Recreation
William H. Creswell, Jr., Ed.D.

New York State Dental Hygiene Teachers Association
Mrs. Mary Hutton, D.H.

Constituent Associations

Michigan School Health Association
E. J. McClendon, Ed.D.

California School Health Association
G. Mannerstedt, M.D.

New York Association of School Physicians
C. Adele Brown, M.D.

Mae Hare, M.A.,
New York School Nurse-Teachers Association
Virginia Thayer, S.N.T.

THE JOURNAL OF SCHOOL HEALTH
VOL. XXX JANUARY, 1960 No. 1

CONTENTS

A Significant Factor in the Man-Power Shortage 1
Rear Admiral Bartholomew W. Hogan
Some Recent Publications 9
Bridging the Gap Between School Health and Public Health 10
J. Keogh Rash, H.S.D., M.P.H.
A Message from the President 14
Dental Health of Children in the Fourth Grade of Four Elementary Schools in Lubbock, Texas 15
Mina W. Lamb, Ph.D. and Era Ford, R.N.
Dental Examinations Show Benefits of Water Fluoridation 26
Abram Cohen, D.D.S.
Supplement to an Article in the November 1959, Issue 27
School Health and Guidance Services: a Cooperative Venture 28
Pauline R. Carroll, R.N.
Abnormal Behavior Among Normal Children 31
Sentence Completion Health Attitudes Test for College Students 33
Charles E. Richardson
Atomic Energy: Some Positive Aspects 36
Gilbert M. Shimmel, Ed.D.
Screening for Heart Disease in Elementary School Children 41
The Research Council 42
Montgomery County, Md., Surveys the Needs of Youth 45
National Foundation Health Scholarships 46
What Is the Polio Situation Today? 47

THE JOURNAL OF SCHOOL HEALTH
THE AMERICAN SCHOOL HEALTH ASSOCIATION
Published monthly, except July and August, at Buffalo, N. Y.

Editor
DELBERT OBERTEUFFER, Ph.D.
337 West Seventeenth Avenue
The Ohio State University
Columbus 10, Ohio

Assistant to the Editor
DONNA L. RAINEY

Executive Secretary
A. O. DeWEESE, M.D.
515 East Main Street
Kent, Ohio

SUBSCRIPTION RATES TO THE JOURNAL
Membership dues, $4.00 including Journal;
Single copies 50c, send payment with order

Copyright, January, 1960
The American School Health Association

Entered as second-class matter at the Post Office at Buffalo, N. Y.
October 5, 1937

The Journal of School Health
is printed by
RAUCH & STOECKL PRINTING CO., INC.
120-130 ELMWOOD AVE., BUFFALO, N. Y. (near Allen)
Modern equipment and a staff of craftsmen place us in a position to compete favorably for publications and general printing
Universities and organizations are invited to submit their printing problems

REPRINTS

Reprints should be ordered in lots of 100 or more within twenty (20) days after issue of the *Journal* in which the article appears.

Prices are dependent on the length of the article, including space occupied by cuts and other illustrations.

Must order within twenty days of date of issue. Carrying charges extra.

To insure delivery on the following month, a subscription must be in the hands of the Treasurer not later than the 20th.

MEMBERSHIP APPLICATION AND JOURNAL SUBSCRIPTION

American School Health Association

I, ..., hereby apply for membership in the American School Health Association and enclose $4.00 for annual membership dues, including a year's subscription to the Journal of School Health.

Date ..... (Signed) .....

....
Official Position Address

Date.....

Please fill out and send with check to A. O. DeWeese, M.D., Secretary and Treasurer, Kent State University, Kent, Ohio.

Members of three years' standing are eligible for Fellowship — dues $8.00

Cut out and mail or hand this to a friend

THE JOURNAL OF SCHOOL HEALTH

Devoted to the interests and advancement of school health service and instruction. Your participation by membership is solicited.

Vol. XXX JANUARY, 1960 No. 1

A SIGNIFICANT FACTOR IN THE MAN-POWER SHORTAGE*

REAR ADMIRAL BARTHOLOMEW W. HOGAN, (M.C.) U.S.N.

It was with great pleasure that I accepted your invitation to address this distinguished group. I have long contended that a free interchange of ideas between medical groups, no matter how diverse or specialized their interests, is essential if we are to have a well-integrated and effective national health program. Although our work environments are not the same, the problems I would like to discuss this evening are not unique to the Navy, but are equally applicable to your special situation. We all work with humans — and humans share attributes and problems in common regardless of their environments. The American School Health Association and the Medical Department of the Navy have a common objective — the prevention and control of illness.

The *prevention* of illness in the Navy and in all of the armed services has long been recognized as of prime importance. Until late in the Eighteenth Century, it was not unusual for two-thirds of a ship's crew to die of scurvy during an extended voyage.

For many years the British Navy lost more than a thousand men each year from scurvy, and in 1799 the Channel Fleet returned to port after only ten weeks at sea with 2,400 cases of scurvy. The *importance* of *smallpox* to naval and military undertakings was demonstrated when a planned invasion of England was abandoned because large numbers of the crews of the French and Spanish ships became ill and were incapable of performing their duties. There are many examples of the interrelation of preventive medicine and successful military operations.

The prevention of disease and the treatment of the sick and the injured minimize our military manpower requirements. There is, however, a tremendous loss of manpower over which the armed forces have no control. This loss occurs when young men of military age are found unacceptable for military service or when such individuals bring to the service defects which prevent them from performing their duties. I feel that there is much that you can do to change this situation. Everything that improves the physical, mental and moral fitness of our youth contributes to the strength and future of our country.

* An address prepared for the banquet of The American School Health Association in Atlantic City, October 21, 1959, and read by Rear Admiral C. B. Galloway, (M.C.) U.S.N.

To illustrate the magnitude of the loss of manpower in this country due to illness, I would take you back to World War II.

During the period 1942-1945, some twenty million men were medically examined for military service. Of this number, six million were rejected. This fact is appalling — in addition, more than one and one-half million men were separated from the services for medical reasons. Less than half of these were separated because of battle wounds, injuries or disease related to their military experiences. The remainder were separated because of medical conditions which were undetected at enlistment and which became apparent during their training and service. In addition, three-quarters of a million men were separated because of non-effectiveness due to behavior and personality disorders. Of all the men examined, only two-thirds were physically qualified for military service, the other third was physically or mentally unfit to defend their country.

These figures represent the situation two decades ago, when the techniques and instruments of war were conventional. Other than the widespread use of aircraft as an offensive weapon, the techniques then were not too different from those used in World War I. In late 1945, however, a new weapon was introduced — the most devastating of history. The direct results of its employment are known to all of us. The indirect result, equally frightening, relates to the psychological impact on the total populations of the world.

The use of atomic weapons ushered in a new *concept* of warfare. Although it brought a rapid end to World War II, it also initiated a weapons race between world powers and today much of the world's energy is directed to the development of new and even more effective weapons systems. With each new weapon, additional physical and mental stresses are imposed which affect not only those in the military services, but the entire population. As new stresses appear and are recognized, we must be prepared to take immediate action to counter or reduce these stresses to levels which can be tolerated by the average man and woman.

Plans are current to initiate manned flight into space. To the best of our ability all the physical and mental stresses which may be encountered have been determined, defined and evaluated. Seven men have been selected as candidates for this flight. I am certain that you are all cognizant of the complicated, technical medical procedures that were used in their selection. It is obvious that such selection techniques cannot be used in the screening of the average serviceman, despite the fact that under conditions of modern war-

fare we may each be subjected to forces, stresses, and environments differing little from those expected to be encountered by the Astronauts.

To emphasize one aspect of the problem of manpower loss common to both the navy and civilian life, I have selected for discussion a special group which includes the majority of those individuals requiring premature separation from the military service.

This group is of special interest to me because they fall within the perimeters of my professional specialty — psychiatry. These are individuals with personality and behavioral disorders. As you know, these disorders are characterized by a variety of defects or abnormal trends in the personality structure. In many cases, they are manifest as a pattern of a social behavior rather than by frank mental or physical symptoms. Due to their inability to maintain an emotional equilibrium under minor stress, these individuals are, as a group, largely noneffective and constitute approximately one-third of all those separated from the Naval Service.

In addition to the noneffectiveness of these individuals, they are capable of demoralizing groups with whom they associate. The juvenile delinquent gang is an example of the effect such individuals may have on our society. These gangs have terrorized segments of our cities by general lawlessness and senseless murders. Fortunately, these cases are the extremes of the character and behavioral disorders; however, they serve to point up and emphasize the seriousness of the problem inherent in dealing with this special group. I am deeply concerned not only as a naval officer and a physician but also as a citizen.

It is only when the behavioral manifestations of these disorders become annoying to others that something is done about it — frequently, the action taken is disciplinary rather than corrective or therapeutic.

Inasmuch as these disorders constitute a major problem to the nation, I heartily endorse any and all efforts directed to their solution. I look forward to the development of a dynamic working formula for their diagnosis and treatment. To this end, the Medical Department of the Navy has recently established a neuropsychiatric Research Unit at San Diego, California, which includes in its mission a broad comprehensive study of this disease group. This facility is located at San Diego to permit study of the recruit as he arrives at the Naval Training Station or the Marine Corps Recruit Depot. Study of his performance as a recruit and further study of

the results of psychiatric therapy should he become a patient at the San Diego Naval Hospital will be possible. In addition the behavioral patterns of recruits within the retraining command will also be studied. This research facility has a civilian and military staff whose activities are guided by an outstanding group of civilian consultants to the Bureau of Medicine and Surgery.

Until such time as we obtain an accurate understanding of the cause and nature of these disorders and have developed adequate methods of treatment, it is incumbent upon you and me as citizens, parents, physicians and educators to do everything possible to further early diagnosis and adequate treatment. You are in an excellent position to detect the first signs of a defect in personality and to refer the child to the school psychiatrist, psychologist, counselor or community mental health center. In this way it may be possible to prevent the development of a full-blown disorder which, otherwise, may result in a serious burden or loss to the community.

The weapons of the modern ship are complicated and require a high level of technical skill and physical fitness. The effectiveness of any weapon system reflects the health, training, motivation and morale of the crew.

Rapid changes in the design of ships and planes and the associated demands upon the crew emphasize the necessity for a continuing evaluation of our physical and mental enlistment standards. A wise investor does not invest unless he has reasonable assurance that the returns will justify his expenditure. The Medical Department of the Navy has established physical and mental standards for enlistment which give reasonable assurance that men selected for service will be able to fulfill their enlistment contract without requiring extensive hospitalization or medical care. Despite these careful selection procedures, we still lose an appreciable number of men each year prior to realizing an adequate return from our training investment.

Naval medical statistics have consistently shown that the majority of premature separations from the service occur within the first two years. Many defects requiring survey from the Navy existed prior to enlistment and were *not* detected by routine physical examination. In the majority of cases they became apparent only after the individual was exposed to the rigorous demands of naval recruit training.

One can delineate a number of personality traits and defects which may first appear in the individual at the primary school level and later reappear at the naval training station or later while in an

active duty assignment. The passive-aggressive child in school is the late scholar — frequently absent. He may be unclean, careless of dress, hostile and surly, frequently uncooperative and often at the bottom of the class. Behavior in individuals who manifest this personality trait represent an indirect expression of hostility against the symbols of authority with which he must live. This behavior pattern may begin in the pre-school group and if unrecognized blossom into a fine thistle-weed in the later school years. When things are going right for this individual his obstructionist tendencies are not evident and he may behave in a more or less acceptable manner. However, when things do not go his way, or he is not favorably motivated this mechanism is used to strike back at his environment. In the naval service this characteristic soon leads the individual into disciplinary situations. The primary manifestation is absenteeism and in the military service unauthorized absence is of necessity a punishable offense. The standards of personal neatness and military appearance are high and few of these individuals meet the expected levels of performance. The shirking of duties due to passive aggressive maneuvers cannot be tolerated and rapidly precipitates disciplinary action or psychiatric consultation. Only occasionally can these individuals be salvaged for effective naval duty. It is obvious that the longer abnormal behavior is allowed to continue the more difficult correction becomes.

The individual who reacts to real or fancied threats with aggression is also familiar to everyone dealing with students. This tendency may become evident at a very early age and is characterized by pushing, shoving, bullying, and other signs of overt aggression. The more insecure the child the more active the behavior. Here, the problem is primarily one of adequately directing this aggressive thrust and energy which represents an acting out of unrecognized hostility. This behavior pattern, if channelled into organized sports and supervised group activities may result in an acceptable social behavior — when undirected the results may be disastrous. Within the service this group has difficulty adjusting to discipline and the order of military life. The excessive use of alcohol is frequent and disciplinary problems are ever present.

Passive dependent traits can be recognized in the early school years when the child is anxious, depressed, unhappy in school, frequently crying, and homesick. These traits carried into military service invariably result in excessive sick days, multiple physical complaints, minimum attention to work, inadequate progress and

eventual dismissal from the service back to the protective home environment.

Obviously, these patterns of behavior are not at the conscious level. Treatment is difficult and prolonged.

While the less serious character and behavior disorders may not come to the attention of the general public, they still produce social ineffectiveness. Individuals with these disorders are non-productive citizens and are unable to adjust to their environment or make a productive contribution to society. It is appalling to read the socio-medical statistics of this group. It reemphasizes that we as citizens with medical responsibilities have additional social and moral obligations to these individuals. I am certain that *much more* may be done to prevent these unfortunate social casualties. Patients with fixed abnormal behavior patterns frequently are not amenable to the usual short-term psychotherapeutic approaches.

The ineffectiveness in this particular group represents not only a major problem to the nation's welfare, but as you know also constitutes a serious problem for the school health authorities. Great advances have been made during the past fifty years in psychiatric, diagnostic and treatment techniques. These advances have given us an excellent understanding of the psychoses and the neuroses and we can now treat these conditions with reasonable assurance that many so afflicted will again be productive members of society. Unfortunately, our knowledge concerning the character and behavior disorders remains extremely superficial. Much study will be necessary before we have an understanding of these disorders which will enable us to recognize, prevent and successfully treat these unfortunate patients.

Obviously, the national percentages do not hold for each locality or for each individual student or military group. However, the statistics which I have quoted point forcibly to areas of major importance to all of us concerned with the health of young America, especially in the light of the need in these complicated times for qualified defenders of the American way of life.

Of special concern to those charged with the day-to-day supervision of the school population is the broad overriding problem of personality reactions and mental health. It seems to me that nothing can be of more importance than the need for understanding and constant cooperation between school doctors and nurses, school administrators and teachers, community child guidance clinics and practicing psychiatrists and psychologists united in the cause of discovering *early* and dealing *promptly* and *intelligently* with

evidence of behavioral deviations which may develop to the point of requiring continuing medical and social supervision.

Here, ladies and gentlemen, is a problem worthy of the best thought and best effort of those dedicated to training the youth of America. As members of the American School Health Association you have a tremendous responsibility to the future citizens of the free world — your opportunities in this field are unlimited.

* * * * *

SOME RECENT PUBLICATIONS

The Alexander Graham Bell Association for the Deaf announces its two latest publications, "Hearing With Our Eyes, Book 2" and "Conversational Language." Inquiries should be addressed to the Association at 1537 - 35th Street, N.W., Washington 7, D. C.

Watch for the publication which will probably follow the March, 1960, National Health Forum on Positive Health of Older People, to be sponsored by the National Health Council.

The World Health Organization has published No. 177 of its technical report series entitled "Social Psychiatry and Community Attitudes." This is the seventh report of the expert committee on mental health. Inquiries should be addressed to the World Health Organization, Palais Des Nations, Geneva, Switzerland.

The Nassau Tuberculosis, Heart and Public Health Association of 1432 Northern Boulevard, Roslyn, New York, in their publication "Ideas for Teachers" has adopted all of Volume 26, No. 1, to the question "Smoking — Should I?" There are excellent articles on The Cigarette Controversy, Teen-Agers Turn To Smoking In Desire to Act Like Adults, Why People Smoke, Should Students Smoking Be Prohibited and other matters of considerable interest on the smoking controversy.

The American Heart Association at 44 East 23rd Street, New York 10, New York, has informed us of their very excellent series of films on specific heart diseases. These films will be of value to high school health education programs and may be purchased by high school and public school film libraries at the cost of the prints plus handling. The series is entitled "The Cardiovascular System in Health and Disease," the films range in length from six to ten minutes and have the following titles: Circulation of the Blood, Congenital Heart Defects, Rheumatic Heart Disease, Arteriosclerosis, High Blood Pressure, Coronary Heart Disease, Varicose Veins, and Strokes. Preliminary review of two of these films indicate that they would be of extraordinary value in health education courses.

BRIDGING THE GAP BETWEEN SCHOOL HEALTH AND PUBLIC HEALTH

J. KEOGH RASH, H.S.D., M.P.H.

School of Health, Physical Education, and Recreation
Indiana University

The profession of health education, like any young and growing profession, has been subject to the development of divergent points of view among its membership. Such a development has resulted in a cleavage between school health education and public health education. The school view holds that the health educator is a teacher while the public health point of view has come to envisionage the health educator as a community organizer, doing little if any actual teaching.

The history of school health work reveals numerous instances of misunderstandings and lack of agreement. Examples of such problems include administration policies, employment of nurses by boards of health and boards of education, the formation of new professional associations, and the reported lack of cooperation between public health programs and school or college health programs.

Characteristics of the programs: In comparing school health and public health we find that each has certain unique characteristics. In examining the school program we find the following features which are rather unique to schools: The school program is a *required program* which is *knowledge centered.* The *teacher is an authority* in subject and situation with *well defined responsibilities* including *academic marking.* The school presents a *captive audience* of fairly *homogeneous groups.* Teachers can call on *tested methods* of teaching. Close association allows for *personal influence.*

In examining the public health program we find that it is *permissive* and *health centered.* Resouce *authorities are readily available.* The methods of *mass media* are in common use.

The distinction between personal influence and mass media is worthy of special consideration. Roper [5]:XV-XViii has suggested that there are well defined patterns of communication, and of subsequent influence in the American public. He points out that the flow of ideas moves in a series of concentric circles from a very few (probably 6) *Great Thinkers* in the inner circle, to an adjacent small group (possibly 12) of *Great Disciples,* to a larger group (250-1000) of *Great Disseminators,* to a still larger group (15,000-

A condensed version of a paper presented before the Second General Session, American School Health Association, Atlantic City, N. J., October 19, 1959.

50,000) of *Lesser Disseminators,* to the *Participating Citizens* (10 to 25 million), and finally to the great mass (75 million) of *Politically Inert.*

With this recognition of the importance of close personal relationship in communication and the corresponding recognition of the importance of personal influence in changing behavior, comes a subsequent recognition of the need to evaluate the success of mass media as an educational medium.

Similarities of the programs: Fundamentally, both programs are educational in nature. Unless an activity is basically educational it has no place in the school program and a very limited place in the public health program. People must be taught to help themselves. Intelligent self direction of health behavior is a worthy goal of health education.

Both programs are *health programs.* In fact, both programs are public health programs. It is a very serious matter that school health programs are so commonly set apart as something different and separate from the public health program, and this is done as frequently by school people as by others. The school health program is actually a special phase of the public health program.

Both programs are *community programs.* Both are concerned with protection and promotion of community health, working in and through recognized community agencies.

Both programs are *concerned with human welfare.* We are no longer concerned over disease and defect simply because they may interfere with learning. We are concerned of their impact on the total individual, a sacred individual worthy of the good things in life.

To further illustrate the similarities of these programs, it is only necessary to note that the divisions of the health department include the Administration, Public Health Nursing, Sanitation, Nutrition, Preventive Medicine, Maternal and Child Health, Laboratory, Education, and possibly others, while the school health program includes the Administration, School Nursing, Environmental Sanitation (Custodians), Nutrition, Preventive Medicine (Doctors and Dentists), Child Welfare Services (Counsellors, Social Workers, etc), Health Education, and possibly others, giving a pattern strikingly similar to the public health program.

Bridging the gap: I propose that the means for bridging this gap may be found in councils, committees, and key individuals which are commonly inherent in the community. What is needed in most cases is a catalytic agent, an enzyme (so to speak), which will stimulate action.

I should like to propose three levels of action in the community. The first, and universally possible, is the *school health committee.* As Dr. Cyrus Maxwell[7] has pointed out, even in a one teacher rural school there is need for such a committee. In such cases the school health committee may include the teacher, a pupil, a parent, a board member or trustee, a physician (possibly the health officer), and a nurse (possibly a P.H.N.). This is an action group, concerned with getting things done in and for a particular school or school building.

The second level of community action is the *school health council.* This council is composed of representatives of the schools in the school system, including representation from the school health committees. It is concerned with philosophy and policies of the school system.

The third level of operation, is the *community health council.* This council includes representatives from the many citizens groups having a health interest. The new publication, *The Key to Community Health*[1], gives an excellent treatment of the community health council.

With the various committees and councils forming the bridge, the *health coordinator,* functioning as a local community level worker, will be in position to act as a catalyst.

We have examples of the successful use of the coordinator in the Kellogg program, the Los Angeles School System, and the Florida plan. The importance of councils is illustrated by the article on a "School District Health Council, Is Its Existance Justified?"[8] and the report on "A Student Health and Safety Council at Clayton Valley School"[6].

A recent study by Claude Cook[2], supports the need for a health coordinator. It is his conclusion that the health education teacher is perceived by the teacher, the principal, and the supervisor as a classroom instructor confined to the classroom. This perception of the work of the health educator virtually dictates the appointment of someone to promote coordination.

In addition to the use of committees, councils, and coordinating personnel in our efforts to bridge the gap, I suggest that there be more interchange between the personnel of schools of public health and school health. I also propose more sharing of experience at the professional preparation level as well as at the in-service level. The typical public school classroom provides an excellent setting for bridging the gap. In this connection, *The Journal of School Health* is rendering yeoman service.

I propose that school health and public health authorities establish minimum qualifications for the health coordinator and that we work to secure the employment of such personnel. Without attempting to list the specific qualifications of the Coordinator we can assume that he must understand both the school health and the public health programs.

As I have indicated, it is my conviction that these two programs have much more in common than is usually recognized. I want to emphasize the fact that the school health program is, in reality, an important aspect of the public health program. In fact that it has certain characteristics which differ from those of the public health department does not divorce it from its place in the public health family. We have done a grave disservice to the total public health program by creating this dichotomy, and it is time that we emphasize the unity.

With the various phases of the total program making their own individual unique contributions we can look forward to greater achievements. Through the efforts of teachers who understand the public health program, in its broadest sense, we can develop a citizenry capable of participating in such a program. Under the leadership and stimulation of qualified health coordinators and other community leaders we can look forward to greater coordination and articulation of the many aspects of the public health program. Through the various systems of councils and committees which may be developed to meet community needs we can secure a closer working relationship between all agencies to the end that we may more fully realize Winslow's concept of "preventive disease, prolonging life, and promoting health and efficiency through organized community effort." [4]

BIBLIOGRAPHY

1. American Medical Association, *The Key to Community Health*, A.M.A. Chicago, 1959.
2. Cook, Claude T., "Perceptions of the Functions and Competencies of Secondary School Health Educators", *The Journal of School Health*, Feb. 1959, pp. 50-60.
3. Frakes, Randall, "Cooperative Relations in Health Education", a mimeographed report of some findings in a study conducted under the direction of Dr. Herbert Walker, Columbia University, 1954.
4. Hanlon, John J., *Principles of Public Health Administration*, The C.V. Mosby Co., St. Louis, 1955, pp. 693.
5. Katz, Elihu, and Lazarsfeld, Paul, *Personal Influence*, The Free Press, Glenco, 1955, pp. 400.
6. Krigin, Jane and Glass, Lloyd, "A student Health and Safety Council, at Clayton Valley School", *The Journal of School Health*, Feb. 1959, pp. 67-72.
7. Maxwell, Cyrus, "The Optimum School Health Program", *The Journal of School Health*, Sept. 1950, pp. 181-187.
8. Palmeri, Joseph F., "The School District Health Council: Is Its Existance Justified?" *The Journal of School Health*, Feb. 1959, pp. 61-66.

A MESSAGE FROM THE PRESIDENT

As your President, one of my first responsibilities is the appointment of committees for the coming year. To carry on its work, our Association sets up three types of committees. First are the *Standing Committees,* concerned with such matters as the constitution, by-laws, and membership. These have rotating membership, assuring continuity in Association activities.

Next are the *Study Committees,* established to investigate and to recommend solutions for specific problems. Such committees may be dissolved when their assignments are completed. Study committee reports appear from time to time in the *Journal.*

A third type of committee is the *Special Committee.* One such committee formed this year on the recommendation of our outgoing President, Dr. Oberteuffer, has been set up to study the structure of the Association and to make recommendations to the membership of any changes they feel to be advisable.

Recently, your Governing Council has approved for this year the operation of a Research Council. It is hoped that this council will be able to stimulate interest in research in the field of school health, thereby benefiting all of our programs.

The American School Health Association is the only national organization whose efforts are devoted exclusively to the improvement of school health programs. Within the membership are physicians, dentists, dental hygienists, nurses, and health educators employed by school boards, health departments, colleges and universities. The strength of our Association lies, I believe, in the diversity of its membership. The team approach to school health problems is possible largely because of this variety of experience, skill, information, and viewpoints.

In looking over membership lists, it became quite evident to me that many of you have never had an opportunity to become actively involved in the activities of the Association. I know that there are many who have a great deal to contribute through such active participation. The interest and support of each one of you is highly valued by the Association.

Would you like to serve on one of the above mentioned committees? Are you engaged in, or do you have knowledge of, any research currently being carried on in the school health field?

Have you any suggestions for ways the Association can serve you, our membership, better? If so — let us hear from you.

LYDA SMILEY,
President, American School Health Association — 1959-60

DENTAL HEALTH OF CHILDREN IN THE FOURTH GRADE OF FOUR ELEMENTARY SCHOOLS IN LUBBOCK, TEXAS

MINA W. LAMB, Ph.D. and ERA FORD, R.N.*

A large number of studies have been made to determine the caries rates of school children all over the world. An excellent summary of numerous reports on American children can be found in the National Research Council publication, *A Survey of the Literature of Dental Caries,* published in 1952 by the National Academy of Sciences, Washington, D. C.[1]. No study from Texas or any adjoining state was included. Furthermore, a vast mass of research has been done on causative factors for dental decay. The studies generally can be classified as research to determine:

1. Influences of the anatomy and physiology of teeth on development of caries.
2. Influences of oral environment on dental caries.
   a. action of specific organisms.
   b. characteristics of saliva related to formation and control of caries.
   c. carbohydrate as a causative factor in caries formation.
3. The relationship of nutrition during pregnancy and lactation to the dental welfare of the child.
4. The status of nutrition of the growing child as affecting dental caries.
5. The role of fluorine — its beneficial and toxic influences on teeth.

Apparently little attention in proportion to its importance has been devoted to the application of research findings to educational processes which reach large groups of people.

Renewed attention has been focused on the dental health of population groups since the discovery of the therapeutic value of various fluorides. Many studies report favorable influences of fluoridated communal water on the dental welfare of children, the presence of fluorides in the drinking water reducing the incidence of caries as much as 60 per cent. Concentrations of fluorides of about 1 to 1.5 p.p.m. in the drinking water have prophylactic action against dental decay whereas concentrations of higher than 2 p.p.m. have definite toxic effects causing mottled enamel with resulting brown stain. The exact level at which toxicity starts varies with the individual person, his water consumption and other factors.

The beneficial effects of fluorides in preventing tooth decay have initiated two methods of application: one, fluoridation of communal water supplies to concentrations of 1 p.p.m.; and the other, that of topical application of fluorides directly to the tooth. The first method is much preferred since it reaches more people, is a constant day-in-day-out application and is inexpensive.

* Dr. Lamb is professor of food and nutrition, Texas Technological College, Lubbock, Texas. Mrs. Ford is school nurse, Lubbock Public Schools.

But what about the dental health of children in a town where the natural fluoride content is sufficient to be toxic? Is there any evidence of prophylaxis at concentrations of 3 to 4 p.p.m.? The communal water supply of Lubbock, Texas, ranges from 3 to 4 p.p.m., depending on which of 87 city water wells are being pumped at the time. Lubbock is in an area of the High Plains of Texas which has been labeled as an endemic dental fluorosis area by a survey of U. S. Public Health Service[2].

Plan of Study — Many persons have been concerned about the dental welfare of Lubbock children and wanted some definite information on their dental condition. An orthodontist, a school nurse, and a nutritionist formed a planning committee which developed questionnaires, made arrangements to have a representative group of children examined, and analyzed and interpreted the results. From these results an extensive education program was developed.

Using a uniform check sheet, 6 dentists examined at school 381 children ranging in age from 8 to 14 years who were in the fourth grade of four elementary schools in different areas of town. Eighty per cent of the children 9 and 10 years old and eight-nine per cent were 9, 10 and 11 years old. The group included 200 girls and 181 boys about equally distributed as to age and schools. Some of the group were Latin Americans, the balance being white children.

Fourth grade children were selected because they are:

1. mature enough to answer questions.
2. young enough to have deciduous as well as permanent teeth.
3. old enough to have tooth decay
4. honest — not inclined to cover up

Mirror and explorer examinations under spotlight were made of the teeth so that dental cavities were defined as a dental lesion which permitted penetration of the tine of an explorer into the soft carious dentin. This method of examination was decided to be adequate under the circumstances even though more revealing and exacting methods were recognized.

The DMF rate (number of decayed, missing and filled teeth) was not recorded since the rate allows neither for individual cavities per tooth nor for most of the missing teeth to be deciduous ones in these immature children. Furthermore, in most cases, cavities were small to moderate in size allowing for several on a tooth rather than the larger decay areas found in older population groups which would show up in DMF rates.

Results — The children indicated their reactions toward dental

health in an opinionaire administered by their teachers which can be summarized thusly:

62 per cent of the children realized they have dental defects.
48 per cent reported they have bleeding gums.
40 to 70 per cent thought they had bad breath and a bad taste in their mouth.
84 per cent checked that they were anxious about the welfare of their teeth.
49 per cent believed tooth decay is a disease and that it is bound to happen to them.

The children checked that 11 per cent of the mothers and 14 per cent of the fathers have false teeth. The children were not conscious of complaints made by parents about their own teeth. Information about the parents' teeth was omitted by more children than any other item with 26 per cent of them not checking information about one or the other parent.

The children reported that about ¾ of the parents urged them to practice dental hygiene. Nevertheless only 26 per cent claimed they brush their teeth daily with 31 per cent brush theirs morning and night. Nineteen per cent admitted that they seldom brush their teeth, whereas the dentists reported 44 per cent of the children had neglected oral hygiene. The dentists' tabulation included not only lack of cleanliness, but also cases in which deciduous teeth were not removed when the permanent ones were already present and those in which fragmentary pieces of deciduous teeth were clinging to the gum around the permanent teeth. When asked to check a list of items which the children thought might damage teeth if practiced too often, 80 per cent checked both eating candy and other sweets including chewing gum and eating food without brushing teeth as the most common offenders. The highest frequency, in checking a list on common causes of tooth decay, was "Lack of care" followed by "Eating sweets or harmful foods" and "Not the right foods" in close succession. Even though these children appeared to be reasonably well informed on dental hygiene, nevertheless, they failed to practice the very thing they checked as important. On the afternoon of the dental examinations a child in one of the rooms brought for his roommates a big plate of homemade candy which was consumed without reference to dental hygiene practices.

TABLE I
DENTAL CONDITIONS OF CHILDREN

Dental condition in Children	*Number of children in all Schools*					
	200 girls		*181 boys*		*381 children*	
	No.	*%*	*No.*	*%*	*No.*	*%*
No evidence of tooth decay	68	34	75	41	143	38
No unattended cavities	79	40	88	49	167	44
Unattended cavities	121	61	93	51	214	56
Severe cavities	23	19	19	20	42	20
Slight to moderate	98	81	74	80	172	80

Extractions	2	—	2	—	4	1
Repaired cavities	30	15	29	15	59	15
Large fillings	1	3	3	10	4	7
Small to mod. sized fillings	29	97	26	90	55	93
Presence of gingivitis	55	28	43	24	98	26
Poor occlusion	29	15	34	19	63	17
Teeth out of alignment	41	21	32	18	73	19
Difficulty with chewing	18	9	21	12	39	10
Toothache — monthy or oftener	17	9	2	1	19	5
Gumboils — monthly or oftener	9	5	4	2	13	3
Neglected oral hygiene	83	42	84	46	167	44
Mottled enamel	118	59	98	54	216	56
Severe	8	7	5	5	13	6
Slight to moderate	110	93	93	95	203	94
Brown stain	92	78	73	74	165	76

Dental Examination. In Table I is given a summary of the dental examination of 381 children. Thirty-eight per cent of the children showed no tooth decay having neither cavities, fillings nor extractions. Since 44 per cent of the children had no unattended cavities, this means that some 6 per cent or 23 of these had teeth in "good repair." The condition of unattended cavities in these children was considered most serious since 56 per cent of the children had unattended cavities. That is, 214 children had 640 unattended cavities ranging from slight to severe in size and extent. That means almost 3 unattended cavities per child at the age of 9 to 11 years. One-fifth of these cavities was classed as severe by the dentist, the balance being slight to moderate. The questionnaire failed to locate these cavities, whether in temporary or permanent teeth. The dentists observed that the six-year molars were the teeth suffering the highest cavity rate.

Only 4 children had extractions of 8 permanent teeth and 59 children or 15 per cent had repaired cavities. These 59 children had 166 repaired cavities or 2.8 fillings per child. Ofthese fillings, 7 per cent were classed as large and the rest were small to moderate in size. Totalling unattended cavities, extractions, and fillings, we have 814 tooth defects for 237 children or 2.4 defects per child.

The dentists noted gingivitis in 26 per cent of the children. Forty-eight per cent of the children checked themselves as having bleeding gums. This implies the existence of a number of subacute cases. The relationship of this condition to deficiency in ascorbic acid is unquestionable. Poor occlusion was noted in 17 per cent, and 19 per cent of the children had teeth out of alignment. Difficulty in chewing, which was experienced by 10 per cent, was attributed to poor occlusion or alignment and to excessive decay of molars.

Frequency of toothache is not a very exact measure but upon inquiry by the dentist, 59 of the children thought they had tooth-

ache once a month or oftener. This is not an impressive percentage, but it is significant that toothache exists in children so young.

Even though 72 per cent of the children reported that their parents urged them to care for their teeth, the dentists reported 44 per cent with neglected hygiene. This was not only a lack of sanitation, but also included dental neglect in the removal of temporary teeth and fragments of teeth after permanent ones were partially grown. Apparently some temporary teeth were badly decayed when the permanent ones erupted, thereby causing the temporary ones to break apart and fragments to cling to the gum around the permanent teeth.

Mottled enamel was apparent in the teeth of 56 per cent of the children, of whom 6 per cent have severely mottled teeth, and the balance having slight to moderate mottling. Of the children with mottled teeth, 76 per cent had brown stain. A few cases were noted in which the stain undoubtedly was due to other causes. The time of their residence in an endemic fluorosis area was variable in the life of the children.

Differences among children. Very little difference was found in the dental condition between boys and girls as can be noted in Table I. As a whole, girls did not have as sound teeth as boys; fewer girls were free of dental disturbances, more of them had unattended cavities, more had gingivitis, toothache, and mottled enamel. A higher percentage of the boys had neglected hygiene, however.

TABLE II
PERCENTAGE OF CHILDREN AT DIFFERENT AGES WITH VARIOUS DENTAL CONDITIONS

	Years in which Children were Born					
Dental Condition	*1945*	*1944*	*1943*	*1942*	*1941*	*1940*
Number of Children	*6*	*176*	*130*	*35*	*18*	*16*
No evidence of tooth decay	50	47	46	23	33	38
Unattended cavities	50	52	57	77	67	62
Extractions	—	—	2	3	—	—
Repaired cavities	34	21	12	6	6	6
Presence of gingivitis	34	20	33	29	50	50
Poor occlusion	17	23	13	9	11	—
Teeth out of alignment	17	22	18	20	11	6
Difficulty in chewing	17	8	12	3	6	38
Toothache — monthly	—	2	5	6	6	13
Gumboils — monthly	—	2	5	—	—	—
Adequate hygiene	—	70	52	23	28	25
Neglected hygiene	17	7	18	29	39	50
Mottled enamel	34	68	55	40	50	19
Brown stain	50	51	38	40	33	31
Additional data per child						
No. of permanent teeth	12.7	14.5	15.7	19.4	24.5	26.4
No. unattended cavities	3.7	2.8	3.2	3.0	2.8	2.2
No. of repaired cavities	4.0	3.2	2.3	1.5	2.0	1.0
No. of teeth extracted	—	—	—	1.7	1.0	—

Table II shows an analysis based on the age groups represented by these fourth grade children. The examinations were made in December, 1953, and groups are based on year of birth, rather than exact age. Considerable surprise was expressed at the wide age range of children in the fourth grade. Considerable physiological differences existed among children who were from 9 to 13 years old. The number of cases for the ages 8, 11, 12 and 13 years were insufficient for valid conclusions for these ages. Nevertheless, it is significant that neglected dental hygiene increases with increase in age and that the percentage of children with unattended cavities is higher for the older children. The number of cavities per child was higher in the younger children as was the number of repaired cavities per child. The cavities per child were determined by considering the total number of cavities in relation to the number of children who had cavities. The fact that much decay existed in deciduous teeth explained why the younger children had more cavities.

The difference in the mottling of teeth of children in different age groups was interesting. Most of the data at the different ages were influenced by the fact that these children were all in the fourth grade. The older children, therefore, really had been retarded for some reason, such as parents who were in the transient labor force, inadequate economic resources, illness, and other social and personal problems. The older children were primarily from areas of town where low rent housing was available, and most of the younger ones from areas of more stable population groups.

TABLE III

AN ANALYSIS OF DENTAL HEALTH OF FOUR SCHOOLS IN LUBBOCK

	School Number			
	1	*2*	*3*	*4*
Number of Children	*103*	*129*	*89*	*60*
Percentage 9 and 10 years old	96	71	52	80
Percentage free of dental decay	50	30	28	47
Percentage with unattended cavities	38	61	73	32
No. of unattended cavities per child	2.6	2.9	3.5	2.8
Percentage with repaired cavities	27	19	4	5
No. of repaired cavities per child	2.8	3.7	2.3	3.0
No. of permanent teeth	13.5	15.9	18.9	17.9
Percentage with gingivitis	13	32	30	38
Percentage with poor occlusion	18	26	9	5
Percentage with teeth out of alignment	12	36	10	8
Percentage with adequate hygiene	87	30	44	52
Percentage with neglected hygiene	10	14	26	18
Percentage with mottled enamel	73	60	39	55
Percentage with brown stain	52	39	33	50

The difference between the four schools gave much for consideration, as shown in Table III. The percentage of children who were free of any tooth decay was not consistent with the economic level of the area served by the school. Schools No. 2 and 3 had 28 and 30 per cent of the children free of dental decay, whereas schools No. 1 and 4 had 47 and 50 per cent free. Generally speaking, schools No. 1 and 2 are in areas of town which represent higher economic resources than do the areas served by schools No. 3 and 4. School No. 2 and 4 fail to show this influence in the dental records of the fourth grade children. School No. 3 had a higher percentage of children of Latin American parentage and children of the older ages in the fourth grade. At school No. 3 only 52 per cent of the children were 9 and 10 years old and 48 per cent were 11, 12, and 13 years. School No. 1 offered the opposite situation with 96 per cent of the children 9 and 10 years old. School No. 3 had the largest percentage of children with unattended cavities and the smallest percentage with repaired ones. Again School No. 1 had the opposite situation with the highest percentage of children free of tooth decay and with repaired cavities, the percentage of children with unattended cavities being next to the lowest of any school. Table II shows that in general a higher percentage of the older children had unattended cavities and a lower percentage of these had repaired cavities. The schools all show about the same number of unattended cavities per child of the group with cavities, as well as the same number of repaired cavities per child of the group with repaired ones.

Gingivitis seems to parallel economic status of the area served by the school which is in accordance with findings of dietary surveys. Drake and Lamb[3] reported in a dietary survey of Lubbock families in 1942, that 60 per cent of the families with lowest incomes had poor dietaries which were especially low in fruits and vegetables. A certain minimum income is essential not only for good dietaries, but also for good dental health.

The schools differed in the percentage of children with mottled enamel. School No. 1 had 73 per cent of its fourth grade children with mottled teeth whereas No. 3 had only 39 per cent so diagnosed. This difference can be at least partly accounted for by the fact that School No. 1 had more native children — the area includes more long-time residents than that of School No. 3.

The number of permanent teeth per child naturally paralleled the age range represented by the children of the school. School No.

1 had 13.5 permanent teeth per child, whereas No. 3 had 18.9 permanent teeth per child.

TABLE IV
MOTTLED ENAMEL OF TEETH OF CHILDREN IN RELATION TO RESIDENCE IN LUBBOCK

	Length of residence in Lubbock					
	All their life		*More than a year*		*One year or less*	
	No.	*%*	*No.*	*%*	*No.*	*%*
Number of Children	120	32	216	57	29	8
Children with mottled teeth	86	72	115	53	10	34
Moderate to severe mottling	36	42	31	27	3	30
Slight mottling	50	58	84	73	7	70
Children with mottling who have brown stain	83	97	72	63	5	50
Moderate to severe	25	30	19	26	0	—
Slight	58	70	53	74	5	100
Used special water to control fluorine	41	34	61	28	7	24
Children with no unattended cavities	55	46	95	44	14	48
Children with unattended cavities	64	53	119	55	15	52

In trying to determine the prophylactic action of fluorides in the communal water, an analysis of the residence of children in relation to mottled enamel and tooth decay was attempted in Table IV. Of the 381 children, 120 (32 per cent) were native born Lubbock children; 57 per cent had lived in Lubbock more than one year but not all their life; 8 per cent had not lived here over a year, and the balance failed to recall how long they had lived anywhere.

Of the 120 native children, 72 per cent had mottled teeth, of which 42 per cent had teeth which were classed as moderately to severely mottled and 58 per cent only slight. Only 53 per cent of non-native born children had mottled teeth of which 27 per cent had moderate to severe. Of 29 children who lived in Lubbock one year or less, 34 per cent had mottled enamel, 70 per cent of which had slight mottling. Of course these non-native children came from many towns at various times of their lives, many of which had fluorine in the city water supply. Nevertheless, it will be noted that native Lubbock children are more apt to have mottled enamel and more severe than non-native children. Furthermore, a high percentage of native children can expect to have brown stain if the teeth are mottled.

Special "fluorine-controlled" water is produced and sold in this area to combat mottled enamel in children. The results show a lack of beneficial results which may be due to failing to understand the use of this water. Only 33 per cent of the native born children used special water, whereas 24 per cent of the children who had been in Lubbock one year or less also used the water. These latter children

were 8 to 10 years old, an age when the permanent teeth are already enameled even though some had not erupted. Special water would not be efficacious in control of mottling at these ages since its value would be apparent only during the years of tooth formation. Of the children who lived here more than a year and up to all their life, 28 per cent used special water. Of the children who did not live in Lubbock or on the Plains, 62 children used special water. Of the native born children 33 per cent used special water and still 72 per cent had mottled teeth.

TABLE V

CONDITION OF MOTTLED ENAMEL IN CHILDREN WHO USED SPECIAL WATER

	Residence of the Children				*Total Children*
	Native Lubbock	*Other towns of Texas Panhandle*	*Elsewhere*	*Unknown*	
No. children	41	11	56	6	113
No. without mottled teeth	10	2	23	3	36
No. with mottled teeth	31	9	33	3	76
Severe	0	2	1	0	3
Slight to mod.	31	7	32	3	73
No. without stain	15	4	39	5	63
No. with stain					
Severe	0	0	0	0	0
Slight to mod.	26	7	15	1	49

The mottled enamel condition of 113 children who used special water is given in Table V. Of these children 3 had severe mottling and 73 had moderate to slight, or in other words, 67 per cent had mottled enamel. Brown stain was slight to moderate in 64 of these cases and no stain was severe. Of the 41 native born Lubbock children who used special water, only 10 had no mottled enamel and the rest had slight to moderate mottling and 26 children had slight to moderate brown stain. The 11 children who had lived in other towns of the Texas Panhandle before coming to live in Lubbock, also had special water with only 2 of them free of mottled enamel. Of all the 52 Texas Panhandle children using special water, 72 per cent had mottled teeth with 88 per cent of the children's mottled teeth stained.

Of children who used special water but lived elsewhere than the Panhandle, 41 had no mottled enamel in contrast to 23 per cent who had no tooth disfiguration among the Panhandle children. That is, of children who used special water and lived in areas of fluorine rich waters, 77 per cent had mottled enamel, whereas of children who used special water after coming to Lubbock but who had not

lived previously in the Texas Panhandle area, 50 per cent had mottled enamel.

No attempt was made to determine the use that was made of this special water by each child and his family, that is, when consumed, how long, whether exclusive of communal water and so on. Therefore, the effectiveness of the use of this water still has to be established. It would seem nevertheless, that every home in Lubbock and other towns of endemic fluorosis areas would make some effort to control the mottling of the enamel of its children's teeth. These records certainly indicate that the present method of using special water is of doubtful value or why would 77 per cent of native Panhandle children using special water have mottled teeth?

The percentage of native born children who had no unattended cavities is not different from that of other children. The number of cavities per child of this group with cavities is 2.8 for native children and 3.8 for children in Lubbock one year or less. That is, the teeth of native children are not free of decay, but the frequency is somewhat less. The children who lived here only a year or less have the largest number of cavities per child, although the number of children involved in this group is too small for definite conclusions.

Comparison with Other Studies — Comparison with results of other dental surveys is very difficult since so many ways and means are used to express dental welfare. In *A Survey of the Literature of Dental Caries*[1] Table 8 includes the results of many studies on a large number of children. Selecting the age range covered by this study and only results on American children, the following could be compiled:

Percentage of Children with Decay Experience in Permanent Teeth

Author and Location	*No. of Children*	*Percentage of Children Age range of 8 to 14 yrs.*
Stoughton & Meaker (1931) Md., Ga., Ill., Mo.	12,435	63 to 88
Steggerda & Hill (1936) Michigan	1,358	47 to 88
Klem, Palmer, & Knutson (1938) Maryland	2,232	50 to 95 (boys)
	2,184	56 to 96 (girls)
Knutson (1947) Minnesota	2,627	76 to 94
Finn (1947) New York	5,824	71 to 98
Sloman (1941) California	6,923	87 to 91 (boys 12-14 yrs.)
		89 to 92 (girls 12-14 yrs.)

These data are not comparable to those of Lubbock, Texas, children since in the latter, decay was recorded in all teeth, both deciduous and permanent. Stoughton and Meaker are the only ones to give percentages of children with decay experience in both groups of teeth as follows:

94 per cent of 8 year olds
93 per cent of 9 year olds

92 per cent of 10 year olds
87 per cent of 11 year olds
88 per cent of 12 year olds
88 per cent of 13 year olds

These percentages are all much greater than those of the same aged children in the Lubbock, Texas study.

Summary and Conclusions — A study of the dental health of 381 children in the fourth grade of schools in Lubbock, Texas, showed dental health to be a complex and unsolved problem. Less than half of these children, ranging in age from 8 to 14 years, were free of dental decay, 56 per cent had unattended cavities, which averaged about 3 cavities per child. Repaired cavities existed in 15 per cent of the children and 4 children had 8 permanent teeth extracted. Poor occlusion, teeth out of alignment, and difficulty with chewing were observed in from 10 to 19 per cent of the children. Neglected oral hygiene was observed in 44 per cent of the children. Oral hygiene failed to parallel frequency of decay since more boys had neglected hygiene than girls but fewer boys had cavities.

Differences were greater between the children of various schools than between boys and girls or between different ages from 8 to 14 years.

Mottled enamel of teeth is still a perplexing problem in relation to its control in areas where toxic levels of fluorine are present in the communal waters and in relation to dental cavities of children consuming fluorine at concentrations of 3 to 4 p.p.m. in water supplies. The use of special waters needs to be clarified if efficacious results are to be realized. Even when ¾ of the children who used special water developed mottled enamel, nevertheless children whose permanent teeth were completed used the special water to control fluorine intake. Controlled studies need to be initiated to determine successful means of controlling fluorine intake and the effective use of special-fluorine-controlled waters. No beneficial effects in the prevention of dental cavities seem to be contributed by fluorine levels of 3 to 4 p.p.m. in communal water supplies.

Much confusion is prevalent in the thinking of children about their dental welfare which has resulted in a lack of practice of basic dental hygiene. A clear cut dental health education program needs to be initiated for the mother during the child's prenatal period, as well as for the preschool and the school aged children through informed parents, teachers, and school administrators.

REFERENCES

1. National Research Council, A Survey of the Literature of Dental Caries. Washington, D. C.; National Academy of Sciences, 1952.
2. Moulton, F. R., Fluorine and Dental Health. Washington, D. C.; Am. Assoc. Adv. Science, 1942.
3. Drake, P. and Lamb, M. W., Study of the Dietary and Food Practices of 63 Families in Lubbock, Texas. J. Am. Dietetic Assoc., 20:528-529 (Sept.) 1944.

* * * * *

DENTAL EXAMINATIONS SHOW BENEFITS OF WATER FLUORIDATION

ABRAM COHEN, D.D.S.

Board of Education, Philadelphia, Pa.

A recently completed study of dental examinations given school children in Philadelphia shows a range of between 19 and 50 per cent reduction in tooth decay for various age groups tested in the four years of fluoridation of the municipal water supply.

The study compares results of dental examinations given during the school year 1954-55, before fluoridation here, and those of examinations given in 1958-59. The Philadelphia fluoridation program was started in September 1954 and all of the city's water supply was fluoridated by March 1955, it was pointed out.

The index used in the comparison was DEF — decayed, extracted, filled — for the first or primary teeth and DMF — decayed, missing, filled — for permanent teeth. The comparisons are for children from the public, parochial and private schools in Philadelphia and for those aged six, nine and twelve. Figures for the study were available because according to State regulations children are given examinations in the first, third and seventh grades. Also, these figures were used because similar age levels were used in other areas where studies have been made concerning the effects of fluoridation. Several other cities have reported on 10-year programs showing that there was up to 60 per cent reduction in dental decay.

After a four-year program of fluoridation of the water supply, the study shows that the children are benefiting by the addition of sodium fluoride to the water and if it continues at this rate, the decrease of dental decay should compare favorably with other cities which have shown a 60 per cent decrease after a 10-year period."

The local report shows that in the comparison of primary, or first teeth, of children six years of age, 29,490 children were examined in the 1954-55 school year with a DEF rate of 3.5 cavities per child. After four years, of 29,302 children examined the rate was 2.6, a decrease of 26 per cent.

Tests have shown that sodium fluoride is most effective during the prenatal period. These children were two years old when the city water supply was fluoridated.

In the study of permanent teeth, at age six the 29,490 children examined in 1954-55 showed a DMF rate of .4, while the later examination showed .2 for the 29,302 children, a reduction of 50 per cent.

Nine-year-olds, who were five and all of their permanent teeth crowns were formed at the time they first were subjected to fluoridation, showed a 23 per cent reduction in tooth decay comparing 8,124 examined before the fluorine program and 8,454 examined last year.

Even the 12-year-olds have benefited from the program though they were eight years olds when the water program was started and their permanent molars were completely erupted and most other teeth formed. A 19 per cent decrease in decay was noted in the examinations of 19,855 children before and 18,708 after fluorida-

* * * * *

SUPPLEMENT TO AN ARTICLE IN THE NOVEMBER, 1959, ISSUE

In the November, 1959, issue of the *Journal of School Health* on page 348, Dr. Rudolph H. Bock of Palo Alto, California, presented an article on "Amblyopia Detection in School Health Screening." Subsequent to the publication of this article, Dr. Bock requested the Editor of the *Journal* to add the following paragraph:

> "An improvement was made in the occlusor frame described in the November, 1959, issue of the 'Journal of School Health.' The flipper has two spherical lenses (plus 2.0s) inserted in such a way that they cover both vision holes when the flipper is in a horizontal position. This allows one to test for excessive hyperopia without loss to time, and without any additional equipment. Alternate vision testing with oblique positions of the flipper is done in the same way as with the original model. This type of flipper is advisable for usage by those nurses who routinely perform a plus sphere test on their school children as suggested in the Massachusetts and Atlantic City Screening Test."

SCHOOL HEALTH AND GUIDANCE SERVICES: A COOPERATIVE VENTURE

PAULINE R. CARROLL

Director, School Nursing Service

Abington Township School District, Abington, Pennsylvania

In Abington,[1] the school health service is concerned with all of the activities and experiences which affect the well-being of children in school. Pupils are helped directly to achieve and maintain a high standard of health and to understand and assume increasing responsibility for sound health practices as they climb the educational ladder. Children with special health problems are assisted in the adjustment of their educational programs so they may receive the greatest possible value from the opportunities offered in school. Essentially, health services are educational, and are an integral part of the total school program. Efforts of the school are intended to supplement not supplant the responsibility of the home and community for the health of children.

Guidance,[2] as conceived here, is in effect an extension and at the same time an integral part of the total education program. Moreover, it is a concept — a fundamental belief which derives its existence in the educational program from a philosophy of education that is concerned with the many facets of the student's life. This concept is implemented through providing services which will foster optimum development toward a happier, better integrated, and a more socially and vocationally competent individual.

These two viewpoints express mutual agreement upon purposes and service to school children. In operation, both health and guidance services utilize the team approach to problems of the school age population. Teachers, principals, special service personnel, pupils, parents and community agencies are members of this team.

The Psychiatric Consultant — During the past several years, special service personnel have felt the need for help in the recognition and evaluation of psychological problems of children in the Abington School District. In the fall of 1958, a psychiatrist was appointed to the School Health Service to work with the school physician in this problem area. The psychiatrist serves as a consultant to special service personnel, and is a liaison person with physicians in the community.

1. School Health Services, A Manual for School Personnel, School District of Abington Township, Abington, Pennsylvania, 1958.
2. Guidance For All-Round Development, A Manual and Handbook for Counselors, Teachers, Principals, School District of Abington Township, Abington, Pennsylvania, 1956-1957.

Monthly conferences are conducted to include representatives from health services, the guidance department, and administration in which selected cases are discussed for diagnostic purposes. Cases presented are decided upon by representatives of the above groups. In addition, conferences may include pure consultation with the psychiatrist and a special staff member, and in-service training for selected school personnel. The major emphasis, however, is service to children.

Several services cooperate and contribute to the identification and diagnosis of psychological problems in the following ways:

1. Health Service — school physician and school nurse. Responsible for medical history, physical examination by family or school physician, information through conferences or daily observation of psychosomatic complaints, and reports on pertinent information from home visits.
2. Guidance Service — counselors, and other special service personnel; psychologists, helping teachers, speech therapist, etc. Responsible for information obtained from child and parent in counseling relationship, psychological testing, estimate of academic achievement and grade placement, and suggestions for modification of the educational program.
3. Administrative Service — principals and teachers. Responsible for observation of classroom behavior, academic performance and disciplinary problems.

The method of referral to the psychiatric consultant is outlined as follows:

1. Any member of the school staff may suggest a special problem to the Guidance Service. Provided, the problem cannot be resolved by the coordination of routine school services, the counselor prepares a detailed case report for study by the psychiatrist. The report includes all available pertinent information from school personnel, the family, and family physician.
2. The report is forwarded to the director of school nursing service, who, after consultation with the school physician, forwards the report to the psychiatrist preliminary to the monthly conference. The "Referral Guide on Pupil Adjustment" is completed by the counselor and attached to the report.

The method of case conference held each month proceeds in the following manner:

1. Representatives of the three disciplines; health service, guidance department and administration, meet in conference in the school with the psychiatrist to discuss the case. The school psychologist, and director of child accounting usually attend the meeting. Additional personnel may be invited as needed to provide related information.
2. Disposition of the case may result in recommendations for further work within the school; with the counselor, nurse, teacher, principal or other staff members. Other recommendations emphasize working with parents, or referral to family physicians. The purpose of the conference is evaluation, and referral to family physicians, not that of direct treatment with the family which is the role of the family physician who may refer the pupil to a guidance clinic or to private resources in the community. For this reason children, or parents of the children being discussed are not present at the conference.
3. A "Case Conference Summary Form" is prepared by the counselor who initiates the case study. Confidential files of all reports used in the monthly conferences are maintained in the offices of the health service and psychiatrist.

Has this cooperative venture in services to children worked? We believe so in Abington School District. In June 1959, the end of our first year's experience with the psychiatric service, a conference on evaluation and program planning was held. In review, specific help was given to both elementary and secondary school pupils, a limited group of school staff had the opportunity for in-service training, and direct consultation was offered to counselors and school nurses.

The service will continue during the 1959-60 school year in, essentially, the same manner as last year. Changing needs or new emphases may require modification of the present services.

Case Finding, Referral, Follow-Up — There are other specific ways in which school health and guidance personnel can work together to enrich and reinforce the efforts of those concerned with the everyday experiences of children in school. A close daily working relationship provides a fertile ground for the referral and follow-up of pupil problems which are discerned through health appraisals and counseling interviews. School nurses in all schools, and counselors in secondary schools see each pupil every year through regularly scheduled conferences. It is here that the vast majority of problems are identified. Case finding by the two services does not preclude the interdependence upon the classroom teachers, principals, and other school personnel for case finding for these are the key people in any school system.

Special conferences are held in all schools as needed. Here counselors, teachers, principals, nurses, other special service personnel, and parents frequently work together to find help for individual pupils. In addition, parent-counselor-nurse, and counselor-nurse conferences are daily routine.

Communications — Although the flow of information between the two services is often verbal, a structured system of reporting is essential. The health service maintains a comprehensive cumulative health record on each pupil throughout his school life. These records are available to guidance personnel. Usually the nurse interprets the information. In addition, these records are coded by handicap. Lists of handicapped children are maintained by grade and school. Copies are available to counselors and principals. Information to teachers is interpreted through regularly scheduled faculty meetings, and in teacher-nurse conferences.

The guidance service and principals maintain the permanent cumulative pupil record. These records are available to health

service personnel. Counselors interpret information from counselor files to school nurses depending upon the need.

Summary reports on case conferences are shared by both services.

Regular monthly meetings are held for special service personnel. Counselors and nurses participate in these meetings.

Representatives from guidance and health services frequently participate together in assemblies, parent-teacher meetings, preschool registration, in-service training, and educational programs of the school and professional organizations.

Well constructed bridges between health and guidance services can help provide sound highways for children and youth to travel. We recognize the need for the cooperation of all school personnel in order that each child may find the road that is best for him.

* * * * *

ABNORMAL BEHAVIOR AMONG NORMAL CHILDREN — is the title of an article emphasizing the frequency of deviant behavior in 482 children, 6-12 years of age, and carefully studied by two psychiatrists. The group included equal numbers of boys and girls.

Seventeen percent of the children wet the bed within the last year; 28% had nightmares; 65% manifested tension phenomena; 36% had either abnormally low or abnormally high food intake; 27% were nailbiters; 49% were over-active; 30% were restless; 4% stuttered; and 12% had some kind of tic. Half of the girls and 36% of the boys had seven or more fears and worries.

The authors plan future studies to clarify whether these characteristics truly indicate "psychiatric disorders or whether they occur as transient developmental phenomena in essentially normal children."

American Journal of Public Health, September 1958

* * * * *

A SENTENCE COMPLETION HEALTH ATTITUDES TEST FOR COLLEGE STUDENTS

CHARLES E. RICHARDSON

Southern Illinois University

Introduction.—The sentence completion type test has been used extensively during recent years by psychologists, guidance workers, and psycometrists as one of a battery of tests designed to allow patients and students a verbal outlet to semi-controlled stimuli. By this method, the subject is asked to complete a partial sentence and the completion—its direction, length and nature—serves to furnish clues to the subject's latent attitudes, conflicts, ignorance, and indecisions.

Patterned after the original techniques of Payne,[1] the main asset of the test is the potentiality for unlimited response patterns. A subject can be presented with a partial sentence stimulus that appears innocuous, or, at least, ambiguous so that the real purpose of the measurement, that of determining his attitude is not apparent.

A particularly fertile area for its use, other than in a clinical setting, is in college health education classes wherein attitude assessment is believed to be of equal importance to achievement testing.[2]

To this writer's knowledge, however, the present work represents the only effort to construct a sentence completion around health topics.

Construction of the Test.—The first step in test construction was to select a list of pertinent health areas from which partial sentences could be derived.

Authorities tend to agree that the health areas and issues of particular significance to the college student may be categorized as: a. orientation in health and health education; b. mental health; c. family life education; d. body care and grooming; e. depressants and stimulants; f. communicable disease control; g. chronic diseases; h. nutrition; i. safety and first aid; j. recreation; k. physical fitness; l. consumer health; and m. community health organization and resources.[3]

1. H. F. Payne, **Sentence Completions.** (New York: New York Guidance Clinic, 1928).
2. See Robert E. Schneider, **Methods and Materials of Health Education** (Philadelphia: W. B. Saunders Company, 1958), p. 329; C. L. Anderson, **School Health Practices** (St. Louis: C. V. Mosby Company, 1956), p. 282; and Ruth E. Grout, **Health Teaching in Schools** (Philadelphia: W. B. Saunders Company, 1949), p. 236.
3. Report of the National Conference on College Health Education, **A Forward Look in College Health Education.** (Washington, D. C.: American Association for Health, Physical Education and Recreation, 1956), pp. 15 - 19.

The topics dealing with health and health education (orientation), foods and nutrition, physical fitness and exercise, sex and sex education (family life education), and physicians and medical care (consumer health) were chosen as the health areas used in the test inasmuch as these topics lend themselves to some controversy among their reactors.

With the six topics as a guide, 100 partial sentences were constructed and submitted to 245 freshmen at Southern Illinois University enrolled in ten sections of Healthful Living, a basic, required health education course, during Fall Quarter, 1958.

Age-sex distribution of the test population was: 139 males and 106 females, with approximately 80 per cent of each group being in the 18-20 year age range.

Directions to the students were:

> Complete the following sentences with words or phrases which you feel apply. Your responses will be held confidential. There are no "incorrect" or "wrong" answers, since this test is not to be used for grading purposes. Please feel free to give frank and honest reactions to the partial sentences.

Upon analysis of the test results by ten members of the Health Education Department Staff of the University, concensus was reached that forty-nine of the sentence stems were found to be inappropriate in that they failed to elicit completions relative to the health topics decided upon.

The remaining fifty-one partial sentences were randomly arranged to comprise the final form of the test as presented below.

1. I believe that health
2. Most healthy people
3. Health is the responsibility of
4. A person's health habits
5. The human body
6. I believe that doctors (physicians)
7. If I had cancer
8. Health and science
9. In my opinion, sex
10. Compulsory quarantine measures should
11. When dieting is necessary
12. A person's state of health can be judged by
13. I feel that new vaccines
14. If socialized medicine were existent
15. Protecting oneself from catching diseases depends upon
16. Most health-product advertising
17. If there was mental illness in my family
18. I feel that one's food habits
19. My parents' attitudes about health
20. Letting nature take its course, as it applies to matters of health, is
21. Premarital sexual relations
22. In spite of the progress of medical science
23. Living one day at a time is
24. To plan one's daily program of healthful living is
25. Sometimes religious views and health findings

26. I think that certain health laws
27. Health articles in magazines may be considered
28. I think that education for marriage
29. All health "rules"
30. Compulsory physical education in the schools should
31. There are some matters pertaining to health that should
32. I feel that health education is
33. Physical fitness, in my opinion, is
34. Most diseases result from
35. Publications, such as the Kinsey Reports, should
36. The ways of our body are
37. One's health is largely determined by
38. Sex education in schools results in
39. Children of frail or sickly parents are
40. To be concerned with one's health is
41. Survival of the fittest
42. To plan one's daily exercise is
43. While accidents cause many deaths
44. When I notice poor health practices in other people, I
45. What we do about our own health is
46. Today, there are so many health hazards that
47. In general, people would be healthier if
48. Our own likes and dislikes when it comes to food
49. I think that most voluntary health agencies
50. In general, when I go to the doctor
51. There are certain facts about my health

Validity.—A most trying problem in constructing attitude measuring instruments of any kind is validation; special difficulty is encountered with less direct methods such as the one employed.

In this case, logical validity could be inferred upon these bases: (1) Topics around which partial sentences were woven, were drawn from authoritative sources; and (2) through an analysis of the test results, judgments from a jury of experts enabled discrimination among the test items assuring the use of only those which would yield relevant data.

Intrinsic and empirical validation methods could not be used since quantitative measures of a population characteristic were not derived by the use of the test.

Reliability.—A measure of reliability was obtained through reproducibility of responses by subjects on a test, re-test basis.

Upon re-testing one-half of the test sample three weeks after initial testing, using the final form, this investigator and ten members of the Health Education Department Staff compared the fifty-one responses on both sets of tests. By assigning a plus to identical responses, a minus to dissimilar responses a measure of reproducibility was obtained. Tabulations of the eleven judgments revealed that out of a possible 561 plus assignments, 505 had been assigned. Reproducibility, thus, as a measure of the test's consistency in measurement was found to be slightly over 90 per cent.

A high level of consistency measure for sentence completions was also found by the investigator Howard who employed a pre, post-test experimental design and scored sentence completions on a five-point attitudinal scale. He reported the coefficient of correlation between tests was above .85.[4]

Use of the Test.—This writer has used the sentence completion test primarily in the college classroom setting for these purposes: (1) to assess beliefs, attitudes and feelings of students at the outset of instruction—to secure a baseline for evaluating attitudinal growth or change throughout the course; (2) as a guide to formulating content of the course; (3) as a means for directing discussion periods; and (4) to secure a universe of opinion statements for use in constructing Thurstone and Likert attitude scales.[5]

A major limitation in application of the test is that sentence completion techniques cannot be "scored" in the traditional sense. Satisfactory methods for quantification of results remain to be worked out. However, such drawbacks are largely offset by certain other advantages. Sentence completion tests are relatively easy to construct and to administer. They allow considerable freedom for the student to project feelings at or below the threshold of awareness—attitudes that have not been crystallized consciously. Too, such testing methods may negate somewhat the tendency of students to give "socially correct" responses since items on completion tests offer no suggested answer alternatives.

4. A. R. Howard, "Sentence Completions as an Attitudinal Measure," **Journal of Educational Research**, 50: 297 - 305, December, 1956.

5. See L. L. Thurstone and E. J. Chave, **The Measurement of Attitude** (Chicago: University of Chicago Press, 1929); and G. Murphy and R. Likert, **Public Opinion and the Individual** (New York: Harper and Brothers, 1937).

BIBLIOGRAPHY

Anderson, C. L., *School Health Practices*, (St. Louis: C. V. Mosby Company, 1956.)

Grout, Ruth E., *Health Teaching in Schools.* (Philadelphia: W. B. Saunders Company, 1949).

Howard, A. R., *Journal of Educational Research*, "Sentence Completions as an Attitudinal Measure." (50: 297-305, December, 1956).

Murphy, G., and Likert, R., *Public Opinion and the Individual.* (New York: Harper and Brothers, 1937).

National Conference on College Health Education, *A Forward Look in College Health Education.* (Washington, D. C.: American Association for Health, Physical Education and Recreation, 1956).

Payne, H. F., *Sentence Completions.* (New York: New York Guidance Clinic, 1928).

Schneider, Robert E., *Methods and Materials of Health Education.* (Philadelphia: W. B. Saunders Company, 1958).

Thurstone, L. L., and Chave, E. J., *The Measurement of Attitude.* (Chicago: University of Chicago Press, 1929).

ATOMIC ENERGY: SOME POSITIVE ASPECTS

GILBERT M. SHIMMEL, Ed.D.
Stanford University

In view of present world pressures, the word "atomic" almost automatically brings to mind the familiar mushroom-shaped cloud along with the fears, doubts, and tensions it has come to symbolize. Though true that the advent of controlled nuclear fission has raised more questions than it has answered, it has also brought with it great possibilities for an improved life. To dispel the idea that the billions of dollars spent and efforts of our best minds have produced capacity only for harm, it is the purpose of this paper to show the potential for good, with major emphasis on developments towards improvement of health.

Ways in which atomic energy may be used to better world conditions are broadly divided into *power, food production* and *medicine.* In discussing any one of these areas, it must be remembered that discoveries and developments in one field flow naturally into the others and in all of them new knowledge of life processes is being attained which will have still unsuspected, far-reaching benefits.

In recent history, most wars have been fought over sources of power; coal or oil required to furnish the demands of our industrial revolution. Atomic power provides the hope that future wars for this reason may be unnecessary. Virtually unlimited amounts of energy are now available in a form free of many of the limitations accompanying other sources. As of January, 1959, there were reported at least 209 power reactors in operation or at various stages of construction in many different countries throughout the world.[1]

Besides the obvious advantages to improved standards of living made available by increasing technological development, use of atomic power has secondary advantages because of its versatility and mobility. These may eliminate problems of over-crowding since population dispersal will now be more feasible. Cities of the past grew up where they did because of availability of transportation or natural resources, primarily energy sources for industry. Cities of the future may be planned wherever living conditions are most desirable and a small atomic reactor may furnish needed power for homes and industry. Even the past twenty years' increased spread of city dwellers to suburbs and the bringing of "city benefits" to rural areas by widespread electrification points up possibilities in this regard.

Another factor in population redistribution is the newly available water made possible by development of atomic power. The conversion of ocean water to fresh has long been possible and in use on navy vessels and other relatively small establishments but the cost of power required for the conversion blocked its application on larger scale. It is now felt that atomic power can provide the energy for the conversion as well as the pumping for distribution to areas where it is most needed at a cost which makes it feasible. This promises increased food production from the farming of hitherto arid lands. (Farming in the Central Valley of California has long attested to the potential food production by bring water to areas where insufficient rainfall dooms traditional farming methods to failure.) That this has moved from pipe dream to reality is evidenced by the recent announcement by the Federal Government of its intention to build three pilot plants in California and Texas for just such conversion. This development may require sharp revision in our estimates of "total arable land" and "maximum food production possible."

Besides using atomic reactors to provide the power needs of industry, there have been exciting developments which show adaptability to vehicular propulsion. The recently heralded feats of American atomic-powered submarines show how it removes the shackles imposed by sheer bulk and relative inefficiency of other energy sources. Our first nuclear surface vessel, the N.S. Savannah, has recently been launched and has been described as capable of travelling 350,000 miles or about three and a half years without necessity for recharging her nuclear pile.[2] Present research is directed towards aircraft propulsion.

In addition to the increased food production promised by making more farming lands available by water conversion and distribution, atomic energy is showing the way to other potentialities which might yet confound Malthus who complained that "the population increases geometrically but the food supply increases only arithmetically."

By applying the knowledge that radiation causes genetic change, scientists have greatly stepped up mutation rates in breeding experiments designed to develop better food plants and animals; better from point of increased yield, resistance to disease, or adaptability to less than optimum growing conditions. The use of radioactive isotopes has given increased knowledge as to best time and method of fertilizer application, necessity for previously unknown

trace elements, and best water application for stepping up growth rates.[3]

It is this use of radioactive isotopes that is proving to be a veritable jackpot of benefits from nuclear research. Differing from their conventional counterparts only by their radioactivity which makes possible tracing their paths through living tissues, they are proving to be a sensitive tool useful in unlocking the secrets of many of the life processes. Before their availability attempts to trace specific paths of elements as they moved through living plants or animals were restricted to use of dyes or the element in such greatly increased amounts that it interfered with natural use. These radioactive tracers are now disclosing the role of various elements in plant and animal metabolism. Their entry, path and rate of movement, intermediate products, and eventual disposition can now be followed, and with this comes knowledge as to form, time, and amount of the elements desirable for optimum results.

Use of radioactive isotopes in better understanding of life processes has increased production of food animals as well as plants. One example is the work done enabling man for the first time to understand the complex process of milk production and the best dietary supplements to provide for increased amounts of this important food. Other studies have resulted in better production of eggs, growth of domestic fowls, and such important meat sources as cattle, pigs, and sheep.[3]

Besides increasing food production by better plants and animals and farming methods, use of these isotopes has yielded knowledge permitting more of this food to reach the consumer. Advances in this area have been made possible by study of diseases and pests which hitherto destroyed much food either in growth or storage. Studies of plant blights, rusts, and molds promise that the drain on food availability from this source may be greatly diminished. Studies of insects; as destroyers of food crops, as vectors of diseases which attack man or his food animals, as well as the economically beneficial ones such as bees and silkworm, have yielded new knowledge of life cycles. This often yields insight as to how better to attack the destructive ones and how to increase yield of the beneficial ones.[3]

Not yet perfected, the use of radiation in the preservation of food once produced offers tremendous promise. Long interested in improving supplies of fresh foods to troops in the field, the U.S. Army has been subsidizing experiments which promise eventual

storage of highly perishable foods such as fresh meats and vegetables for long times without refrigeration. After exposure to radiation which stops further ripening due to enzyme action and kills any harbored parasites as well, the food may be stored at room temperature with only a plastic wrap to protect it from subsequent re-infection. Once perfected, the potentialities of this discovery are truly staggering. Centralized production and processing, prevention of spoilage in storage, and ease of transportation of perishable foods without costly and bulky refrigeration can result in lower costs and greater availability. The treatment of meats promises eradication of such diseases as trichinosis and tapeworm which are spread by larval worms within the meat itself. Production during good years or during regular growing seasons may be stored cheaply for consumption during low production times. Work continues to perfect the process but encouraging results have been obtained. The Army Quartermaster Corps has reported storage of meats and vegetables for months at room temperature. Where exposures are controlled, there is no residual radiation and little noticeable taste change and feeding of laboratory animals, and later humans, indicates that such treated food is not harmful and is equally nutritious to food not so treated.[4] Very recent reports[5] of harm caused by long-term feeding of a diet consisting exclusively of such irradiated foods points up need for further work before the potential for this process may be realized.

Though the described uses of radio-isotopes in increasing food production have obvious connection to health, they are being used too in methods much more direct. They are playing a vital role in research on causes, effects, and possible treatments of specific diseases. It is important to note that there is considerable overlap, and *knowledge* is the key. Knowledge newly gained about metabolic processes in animals has found application in human medicine. Key research has been directed towards understanding the exact function of various metabolites, the secretion of hormones under varying conditions, iron in its relation to hemoglobin in blood formation, cholesterol in its suspected relation to heart disease, and many other substances involved in vital life processes.

An area of research followed with intense interest even by the layman is that directed towards finding a cancer cure. Research in metabolic differences in normal and abnormal cell growth, differential take-up of specific chemicals by different cells has yielded much information regarding cancer and gives promise that the secrets of its cause and cure may one day be found. In the meantime, medical

science relies heavily on use of isotopes in the diagnosis and therapy of certain specific kinds of cancer.

Medical diagnosis has been improved by use of isotopes in four important ways; radiography, dilution techniques, flow or diffusion measurements, and biochemical concentrations. Radiography is so well known that it requires little discussion except to remind that the widely heralded harmful effects of fall-out have resulted in some increased resistance to use of X-ray even in such accepted situations as chest or dental X-ray. In dilution techniques a compound with radioactive molecules is injected into the blood stream and permitted to mix. A subsequent blood sample, measured for radioactivity, gives a sensitive index of blood volume, hitherto only roughly approximated. Flow or diffusion measurements are used to count the rate of concentration in certain areas and to follow the movements and changing concentrations of the tracers. Biochemical placement makes use of the knowledge that certain tissues have an affinity for certain chemical elements (for example, the thyroid for iodine). Measuring the concentration after ingestion of an "atomic cocktail" not only gives an exact metabolism rate but can also lead to discovery of unsuspected secondary cancers after metastasis since the tissues maintain the affinity wherever located.[6]

At a recent symposium[7] on education and training for Health Physics, AEC spokesmen pointed out the dynamic growth of this new profession designed to promote the beneficial uses of atomic power without unwarranted contamination of man or environment by radiation. Dr. Elda Anderson, President of the Health Physics Society, pointed out that this recently formed organization has more than 1,500 members scattered throughout the world. Their employment ranges from industrial, electrical and research reactors, through government and university accelerators, to various industrial and hospital and research uses of radioactive isotopes. This is evidence indeed of the many peacetime uses of atomic energy already in existence and the demand for increased numbers gives promise of increased use in the future.

Lest the author lay himself open to charges of being a Pollyanna, it must be pointed out that he is fully aware that the distribution of these described benefits to all of the peoples of the world has many problems. It has been the purpose here to point out that atomic power, with its dreaded threat of eliminating man from the earth, has in it also the promise of giving man ever better control of his environment and assuring a future of previously undreamed

possibilities. The dangers are recognized; the benefits are described to show the potentiality; their realization will depend upon man's ability to get along with man.

REFERENCES CITED

1. "World Survey" *Nuclear Power*, Vol IV, No. 33 (January 1959)
2. *Time Magazine* Vol LXXIV, No. 5 (August 3, 1959) p. 19
3. Atomic Energy Commission, "Agricultural Studies" *An Eight-Year Summary of U. S. Distribution and Utilization* Washington, 1957
4. Brownell, L. E. et al, "The Industrial Atom", A Report presented at the Conference on Nuclear Energies. University of California, Berkeley 1958
5. *Time Magazine* Vol LXXIV, No. 18 (November 2, 1959) p. 37
6. Atomic Energy Commission, "Medical and Biological Research" *An Eight-Year Summary of U. S. Distribution and Utilization* Washington, 1957
7. Symposium for Education and Training for Health Physics sponsored by Oak Ridge Institute of Nuclear Studies under contract with the U. S. Atomic Energy Commission held at the Lawrence Radiation Laboratory at Berkeley, California, November 20, 1959

* * * * *

SCREENING FOR HEART DISEASE IN ELEMENTARY SCHOOL CHILDREN — in Grand Junction, Colorado, was carried out on 6,311 pupils between six and eleven years of age. This study covered 95.6% of the total population group of these ages. Innocent (functional) murmurs were heard in 2,068 children (33%) while 33 cases of congenital heart disease and seven of rheumatic heart disease were discovered. Thus, 0.63% of all the children had organic heart disease. The study revealed 29 of these 40 cases were previously unrecognized as cardiac abnormalities. It also relieved at least 15 children of a false diagnosis of heart disease.

Journal of American Medical Association, March 14, 1959

* * * * *

THE RESEARCH COUNCIL

At a meeting of The Governing Council of The Association at Atlantic City in October, 1959, a President's ad hoc Committee chaired by Dr. Wesley Staton of Greeley, Colorado, presented plans for the formation of a Research Council. The Council approved the plan after alterations were made and the *Journal* takes pleasure in presenting the Operating Code of the Research Council. Dr. Staton was appointed by President Lyda Smiley as the first chairman of the group.

I *Name*

The name of this organization shall be the Research Council of the American School Health Association.

II *Purposes*

A. *Immediate Purposes (five years)*:

1. To focus attention of the membership of ASHA and related professional organizations on the need for and significance of research in school health.
2. To help identify and publize important current research needs in school health.
3. To stimulate and promote high quality individual and group research in all phases of school health.
4. To help stimulate the further development and improvement of graduate health education programs leading to the doctoral degree, with a research emphasis, to better prepare college and university teachers and research workers.
5. To provide a Research Council program as part of the annual ASHA meeting, in order that significant research studies may be presented and discussed.
6. To help provide for more extensive publication of significant studies in the *Journal* and by other means.

B. *Long-Term Purposes (five to ten years)*:

1. To provide leadership, in terms of evaluation and consultation, for research concerned with school health programs.
2. To prepare and distribute materials that will be of value to school health research workers.
3. To aid in the development of better understanding of the contribution of school health programs to the health of children and youth by preparing and disseminating pertinent research data to related organizations and governmental agencies concerned with education and/or health.
4. To secure financial support for research projects which will contribute to the improvement of school health programs throughout the nation.
5. To analyze and evaluate specific research projects for possible endorsement by the Council and the Association.
6. To maintain liaison with related research organizations in the United States and other nations.

III *Organization*

A. The officers of the Research Council, comprising the Executive Committee shall be as follows:

1. Chairman
2. Chairman-Elect
3. Past-Chairman

4. Secretary
5. Members-at-large (five, one of whom shall be the Chairman of the ASHA Committee on Study Committees)

IV *Nomination Procedures*

A. Upon approval of the organizational structure and functions of the Research Council by the Governing Council of the American School Health Association, the following procedure will be followed in nominating and electing the first slate of Research Council Officers.

1. The President of the Association shall submit a single slate of nominees for the offices of Chairman, Chairman-Elect, Secretary and five Members-at-Large at the 1959 annual meeting in Atlantic City, New Jersey.
2. Officers for the first year of the Research Council's operation will be appointed by the incoming ASHA President within 30 days after the close of the annual meeting

B. Following the inaugural year, nomination and election procedures for Research Council offices shall be as follows:

1. A Research Council Nominating Committee shall be appointed each year by the Research Council Chairman. This Committee shall consist of three members of the Research Council. The Past-Chairman of the Research Council shall serve as Chairman of the Nominating Committee. Officers are limited to one year of service in their respective specific offices.
2. The Nominating Committee shall:
   (a) Require that each nominee be a member of the Research Council.
   (b) Present to the Council Chairman a slate of one name for each elective office not later than 30 days prior to the annual meeting.
   (c) Prepare a ballot and conduct the election of officers at the annual business meeting of the Research Council. A simple majority of the membership of the Research Council will determine election of officers.

V *Duties of Research Council Officers*

A. *Council Chairman*

1. Serve as representative to the Governing Council of the ASHA.
2. Conduct the annual business meeting of the Research Council.
3. Appoint a Nominating Committee of three members, the chairman of which shall be the immediate Past-Chairman.
4. Appoint and co-ordinate the functions of Research Council Committees.
5. Serve as Chairman of the Research Council Executive Committee; arrange for and preside at a meeting of the Research Council at the time and place of the annual ASHA convention.
6. Co-operate with the other committees of the Association in the co-ordination of activities related to research in school health.
7. Prepare a report of the Research Council activities, including any recommendations for action by the Governing Council, and submit one copy each to the President, President-Elect, Executive Secretary and Treasurer of the ASHA at the annual meeting of the Governing Council.
8. Maintain a file of Research Council correspondence to be turned over to the New President of the Council.

B. *Chairman-Elect*

1. Serve as a member of the Research Council Executive Committee.
2. Serve as representative to the Governing Council of the ASHA.
3. Arrange for the development, organization, and presentation of the Research Council program at the annual Research Council meeting as part of the ASHA program.
4. Assume the duties of the Chairman in the event of his absence, death, or resignation.

C. *Past-Chairman*

1. Serve as member of the Research Council Executive Committee.
2. Serve as Chairman of the Research Council Nominating Committee.
3. Advise the Chairman on matters requiring information of previous Research Council policy and procedure when such assistance is requested.

D. *Secretary*

1. Serve as a member of the Research Council Executive Committee.
2. Maintain communication with the Council membership to disseminate information on, and obtain reactions to, Research Council activities.
3. Record the minutes of the Research Council business meeting.
4. Prepare written summaries of all discussion meeting and other meetings of the Research Council or its Executive Committee for which no written manuscripts are available.
5. Obtain two copies of each paper or report presented by participants in the annual Research Council program of ASHA.
6. Obtain the names and the addresses of all persons attending the annual Research Council meeting.
7. Report the names and the addresses of the new Research Council officers to the Executive Secretary of the ASHA immediately upon the close of the annual convention.
8. Serve as Chairman of the Membership Committee of the Research Council.

E. *Members-at-Large* (*five*)

1. Each Member-at-Large will serve as a member of the Research Council Executive Committee.
2. Members-at-Large shall function in a liaison capacity between the Research Council's Executive Committee and the Research Council membership. Members will be encouraged to channel research suggestions, recommendations, and inquiries to the Executive Committee through the Members-at-Large.
3. Members-at-Large shall serve in a liaison capacity between the Executive Committee of the Research Council and research committees or councils of other professional organizations concerned with school health.

VI *Membership*

A. The President of the ASHA shall appoint 30 charter members in order to provide for the slate of nominees for Research Council offices and for the establishment of essential committees. This shall be done at the 1959 annual meeting of the ASHA in Atlantic City, New Jersey.

B. Following the appointment of the original membership, and for the first year of the Research Council's operation, application for membership shall be approved by the Research Council Membership Committee. The following criteria must be met to qualify for Research Council membership.

1. Fellowship in the American School Health Association.

VII *Conduct of Business*

A. Business

1. There shall be an annual meeting of the Research Council at the time and place of the meeting of ASHA for the purpose of electing officers and conducting necessary business. Policies adopted and action taken shall be subject to approval of the Association's Governing Council.

B. Projects

1. Committees shall be established to carry on projects considered by the Executive Committee to be properly within the purview of the Research Council.

C. Professional Program

1. The Research Council program relating to research in school health shall be presented at the time of the annual Council meeting with a definite place on the Association's convention program and shall be arranged by the Chairman-Elect of the Research Council in cooperation with the Vice-President in charge of Program of the ASHA.

VIII *Amendment of the Council Code*

A. Changes in this operating code may be effected with the approval of the Research Council Executive Committee and by majority vote of the Research Council membership, provided the proposed changes are submitted to members at least 30 days prior to the annual meeting. No amendment or alteration may be effected if it contravenes the Constitution and By-Laws of the American School Health Association.

B. The ASHA Governing Council will review the activities and progress of the Research Council after one year of operation for the purpose of recommending continuance, changes in structure and/or dismissal.

* * * * *

MONTGOMERY COUNTY, MARYLAND, SURVEYS THE NEEDS OF YOUTH

A publication of interest to doctors, nurses and teachers, who work daily with senior high school students, has recently been sponsored by the Montgomery County Council, prepared by the Youth Commission of Montgomery County in Maryland and made available to interested readers on request. This is a survey of youth needs and may be obtained by writing to the Council, Montgomery County, Maryland. The *Journal* hopes to have the summary of this survey presented in manuscript form in an early issue.

* * * * *

THE NATIONAL FOUNDATION HEALTH SCHOLARSHIPS

The *Journal* is pleased to cooperate with the National Foundation in spreading the news about the availability of health scholarships in nursing, occupational therapy, physical therapy, medical social work and medicine. The following outline of this program has been made available to us and because of the significance of it, we are sure our members will want to pass the information on to appropriate and available students.

PURPOSE: Health Scholarships are four-year college scholarships. They pay $500 a year, or a total of $2,000. Each is to help a student prepare for a career as a nurse, an occupational therapist, a physical therapist, a medical social worker, or a doctor. A minimum of 515 Health Scholarships is offered annually.

AVAILABILITY: You may be eligible if you are a citizen of the United States and:

a) a graduating high-school senior interested in a career in *nursing, occupational therapy* or *physical therapy;* or
b) a college sophomore aiming for a career in *medical social work;* or
c) a college undergraduate accepted for admission to an approved school of *medicine.*

In 1960, awards will be made only to students who have been accepted for admission to an accredited college or university for the academic year 1960-61. Students may file applications for scholarships pending acceptance for admission to an accredited school.

DISTRIBUTION: Health Scholarships are apportioned geographically according to population. Up to 25 scholarships, five for each profession, are offered in any state. The applicant's permanent address is used in allocating awards, but winners may attend any accredited school in the United States.

SELECTION: Health Scholarship winners are selected in each of the fifty states, the District of Columbia, Puerto Rico, the Virgin Islands and the Canal Zone by a Health Scholarship Selection Committee. This committee is composed of members of the five health professions included in the Health Scholarship Program.

Winners are selected on the basis of academic record, personal qualifications, professional promise and financial need, as shown in the application blank and other credentials submitted by or on behalf of each applicant. Winners of these awards are announced during the summer.

RENEWAL: Health Scholarships are renewed annually for no more than three additional years, or for a total of four consecutive years, provided the student is in good standing and is following the educational program approved.

USE OF FUNDS: Health Scholarship funds may be used for any educational expense. Students may accept scholarships from other sources, but are expected to inform The National Foundation of the source and amount of other awards.

Application blanks and detailed information are available (after Nov. 15, 1959) from:

a) the head (or guidance or scholarship official) of your high school or college
b) your local chapter of The National Foundation
c) The National Foundation Health Scholarships
800 Second Avenue, New York 17, New York

COMPLETED SCHOLARSHIP APPLICATION AND ALL OTHER CREDENTIALS MUST REACH *THE NATIONAL FOUNDATION HEALTH SCHOLARSHIPS* OFFICE BY APRIL 1, 1960.

WHAT IS THE POLIO SITUATION TODAY? The news about polio in 1959 was nearly all bad. As of October 24, the number of cases had risen 49 percent over the 1958 figure at the same date, and the paralytic total was up even higher — 96 percent.

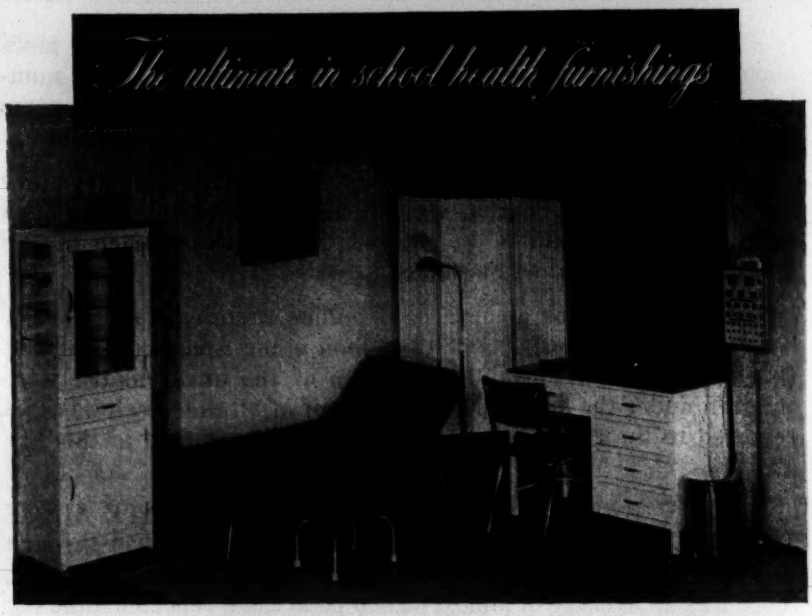
Why did the polio curve take this upswing? Preliminary studies indicate that the nation was hit and hit hard this year by a highly virulent strain of polio-virus. Nevertheless, much of the tragedy that resulted was needless.

Out of apathy or ignorance, 91 million Americans still did not have even one Salk shot and 18 million other Americans had not finished their full series. Five million of the unvaccinated were children under the age of five; nearly half of all the paralytic cases reported in the first nine months of the year occurred in this age group.

WHAT HAS HAPPENED TO THE POLIO RATE SINCE THE SALK VACCINE WENT INTO USE? From 1950 through 1954, the period just before the Salk vaccine became available, there was an average of almost 39,000 polio cases reported annually in the United States. In 1955, the year the vaccine went into use, the number of reported cases dropped to around 29,000. In 1956 and 1957, respectively, the totals fell to 15,000 and 5,500. Since 1957, however, the downward trend has been reversed, with the total in 1958 reaching 5,800 and with about 8,500 cases indicated for 1959. Even more significant, the proportion of paralytic cases was up sharply over previous years.

From "1960 Polio Vaccination Facts" prepared by the National Foundation, 800 Second Ave., New York 17, New York.

* * * * *



SCHOOL HEALTH SUPPLY CO.

7426 Madison Street, Forest Park, Illinois

Now you can buy direct from the manufacturer of a complete line of school health furnishings and SAVE! Designed specifically with the needs of the school nurse in mind . . . you can be sure of quality construction and long lasting values.

Send coupon for your personal copy of the School Health Supply catalog.

Please ship me the following items I have checked contained in your No. 800 suite:

☐ S-800	Chromium adjustable examining light	$ 14.75
☐ S-801	Single door instrument cabinet in jade green, white or ivory	$145.00
☐ S-802	Nurse's desk — stainless steel top in jade green, white or ivory	$135.00
☐ S-804	3 panel aluminum screen, Vinyl, 67" x 60", white or green	$ 34.50
☐ S-805	Palmer recovery couch with tough U.S. Naugahyde covering and adjustable finger-tip dual control back. In white, crimson, avacado, ginger brown, blue, grey, black, sandlewood and coral	$135.00
☐ S-810	Good-Lite Model A eye chart complete with standard 2 cards	$ 46.50
☐ S-816	Detecto scale balance beam (not shown)	$ 65.00

☐ Please send the complete School Health Catalog.

Name_____

School_____

Address_____

City_____ Zone_____ State_____

EDITORIAL STAFF

DELBERT OBERTEUFFER, Ph.D., *Editor*
The Ohio State University, Columbus 10, Ohio

DONNA L. RAINEY, *Assistant to the Editor*
The Ohio State University, Columbus 10, Ohio

ASSOCIATE EDITORS

DONALD A. DUKELOW, M.D.
Consultant in Health and Fitness
American Medical Association
Chicago, Illinois

ARTHUR HARNETT, Ph.D.
Department of Health Education
Pennsylvania State University
University Park, Pennsylvania

GERTRUDE CROMWELL, R.N.
Supervisor of School Nursing
Board of Education
Denver, Colorado

WESLEY M. STATON, Ed.D.
Department of Health Education
Colorado State College
Greeley, Colorado

EDWARD B. JOHNS, Ed.D.
Health Education Unit
University of California
Los Angeles, California

EUGENE GUTHRIE, M.D.
United States Public Health Service
Washington, D. C.

ROSS E. GUTMAN, D.D.S.
State Department of Public Instruction
Albany, New York

EDITORIAL BOARD

ABRAM COHEN, D.D.S., *Chairman* (1960)
Supervisor of Dental Services
Board of Education
Philadelphia 3, Pennsylvania

H. S. HOYMAN, Ed.D. (1962)
Professor of Health Education
University of Illinois
Urbana, Illinois

ELENA M. SLIEPCEVICH, D.P.E. (1961)
Professor of Health Education
The Ohio State University
Columbus 10, Ohio

HELEN T. WATSON, R.N. (1962)
Consultant in School Health
State Department of Education
Hartford, Connecticut

LELAND M. CORLISS, M.D. (1960)
Director of Health Services
Denver Public Schools
Denver, Colorado

CHARLES C. WILSON, M.D. (1961)
Professor of Education and Public Health
Yale University
New Haven, Connecticut

CHANGE OF ADDRESS

Send your new address at least 4 weeks before the date on which it is to become effective, to

Miss Anne Wild

c/o Rauch and Stoeckl Printing Co.

124 Elmwood Avenue, Buffalo 1, New York

Please send old address with the new, enclosing, if possible your address label. Addresses must include zone number.